DRAFT

COVER MATERIALS WORK PLAN

September 27, 2002

PREPARED FOR:

Atlantic Richfield Company
307 EAST PARK STREET, SUITE 400
ANACONDA, MONTANA 59711

PREPARED BY:

BROWN AND CALDWELL
Carson City, Nevada

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SECTION 1.0
INTRODUCTION

Atlantic Richfield Company has prepared this Draft Cover Materials Work Plan (Work Plan) to assess the availability of suitable cover materials (e.g., waste rock, tailings and native alluvium) for potential use at the Yerington Mine Site, pursuant to the Closure Scope of Work (SOW). Per the SOW (Brown and Caldwell, 2002a), the objective of this Work Plan is to evaluate "potential cover materials from alluvial borrow sources and from existing mine units for use in potential site closure activities". The SOW also describes individual mine units that will be incorporated into a comprehensive Final Permanent Closure Plan (FPCP) for the site.

Characterization data for the potential use of cover materials from the Waste Rock Area and Tailings Areas, and from the Arimetco Heap Leach Pads, located within the mine site boundary (Figures 1 and 2) have been presented in companion Draft Work Plans: *Waste Rock Areas Work Plan* (Brown and Caldwell, 2002b), *Tailings and Evaporation Ponds Work Plan* (Brown and Caldwell, 2002c) and *Arimetco Heap Leach and Process Components Work Plan* (Brown and Caldwell, 2002d). Characterization of potential cover materials in these companion Work Plans included an inventory of available material type including volume estimates, the collection of representative samples, and laboratory analyses. Geotechnical analyses included grain size, moisture content, density, compaction characteristics and other physical analyses. Geochemical analyses included acid-base accounting, whole rock chemistry and agricultural parameters to assess the viability of the waste rock and tailings materials to support vegetation.

This Work Plan proposes field investigations to identify additional off-site sources of natural alluvium as potential cover materials. The purpose of the investigation, as stated in the SOW, is to "collect soil samples for analyses and quantify soil volumes" so that "suitable soils can be used to cap facilities to support closure and future land use". Results of the proposed site investigation activities presented in this Work Plan will be compiled and presented in a Data Summary Report.

The remainder of Section 1.0 of this Work Plan describes the location of the Waste Rock, Tailings, and natural alluvium areas, previous sampling and analytical results, and describes the data quality objectives (DQOs) for this Work Plan in more detail. Section 2.0 presents the details of the proposed site investigation activities including proposed sampling locations, sampling protocols, and quality assurance and quality control (QA/QC) procedures. Section 2.0 of this Work Plan also presents a task-specific Job Safety Analysis in the context of a more comprehensive Health and Safety Plan. Section 3.0 lists references cited in this Work Plan.

1.1 Location

The Yerington Mine Site is located west and northwest of the town of Yerington in Lyon County, Nevada (Figure 1). The Waste Rock Areas (WRAs) are located north and south of the Yerington Pit, as shown in Figure 2, and consist of three geographically distinct topographic features described below:

- South WRA is the largest WRA, and occupies most of the area south of the Yerington Pit.
- W-3 WRA was partially mined by Arimetco for leaching in the Phase I, II, III, and IV-Slot Heaps, and lies north of the Phase IV-Slot Heap Leach and east of the Arimetco Electrowinning Plant.
- S-32 WRA consists of low-grade material stockpiled west of the Phase I/II Heap, and south of the Arimetco Plant Site.

The Tailings Areas are generally distributed through the northern portion of the mine site, as shown in Figure 2, and consist of:

- Oxide Tailings located between the Phase IV-VLT and Phase III-4X Arimetco Heap Leach Pads, extending to the western margin of the mine site.
- Sulfide Tailings that occupy the northeast corner of the mine site, except for a natural topographic feature (McLeod Hill).

Four Arimetco Heap Leach Pad areas, shown in Figure 2, that may also provide suitable cover materials consist of:

- Phase I and II Heaps
- Phase III and III-4X Heaps
- Phase IV Slot Heap
- Phase IV VLT Heap

Proposed off-site borrow areas for sample collection and analysis of native alluvium as potential cover materials are shown on Figure 2.

1.2 Previous Monitoring and Data Acquisition

This section briefly describes available chemical and physical data for WRA and Tailings Area materials provided in the *Waste Rock Areas*, *Tailings and Evaporation Ponds* and the *Arimetco Heap Leach and Process Components Work Plans*.

Whole-rock analytical results from an Expanded Site Inspection conducted by the U.S. Environmental Protection Agency (EPA, 2000) for the S-32 and W-3 WRAs. With the exception of copper, all major constituents analyzed from the waste rock samples are consistent with representative local soils metals concentrations reported by Shacklette and Boerngen (1984).

Geotechnical data for the WRAs are presented in engineering documents prepared for Arimetco's Phase IV-Slot Heap Leach Pad. These include an evaluation of bulk slope stability, recommended constructed slope angles and benches, and soil strength properties. Because waste rock materials are identical in geologic character and grain size distribution to the heap materials, these results may be generalized for all WRAs for an evaluation of physical stability.

Whole-rock analytical results from a single sample collected by the EPA (2000) from the Sulfide Tailings Area are presented in the *Tailings Areas and Evaporation Ponds Work Plan*, with general background soil values for the area.

As part of the engineering design of Arimetco's Phase IV-VLT Heap Leach Pad, samples of materials from the Oxide and Sulfide Tailings were tested using the Nevada Division of Environmental Protection (NDEP) Meteoric Water Mobility Procedure (MWMP). In addition, the Oxide Tailings sample was subjected to acid/base accounting, which indicated that that this material is slightly acid consuming (i.e., net acid neutralization potential greater than zero).

The engineering design for the Phase IV-VLT Heap Leach Pad included test results for particle size distribution of Oxide and Sulfide Tailings. Oxide Tailings were found to be "poorly graded sand with silt and gravel (SP-SM)". Sulfide Tailings were classified as a "Grey Lean Clay (CL)". Sulfide Tailings were also evaluated for compaction characteristics, Atterberg Limits (plasticity and liquidity), and remolded permeability. Sulfide Tailings appear to be very uniform, and have a saturated permeability on the order of approximately 2×10^{-7} cm/second.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) for field sampling and analytical activities described in this Cover Materials Work Plan include the collection of appropriate data to support the

- Assessment of native alluvium for use as cover materials, if deemed necessary under the Final Permanent Closure Plan; and
- Development and evaluation of soil cover options for site closure.

Similar DQOs for the use of mine unit materials as cover materials were presented in the *Waste Rock Areas, Tailings and Evaporation Ponds* and the *Arimetco Heap Leach and Process Components Work Plans*.

A four-step DQO process was utilized to develop the activities described in this Work Plan. The DQOs will ensure that data of sufficient quality and quantity are collected to meet the project objectives. The four steps include:

- Step 1. State the Problem;

- Step 2. Identify the Decision;
- Step 3. Identify the Inputs to the Decision; and
- Step 4. Define the Boundaries of the Study.

The problem statement (Step 1) is as follows: "It is unknown whether native alluvial soils are of sufficient quality and quantity to be used as cover materials at the Yerington Mine Site".

Step 2 of the DQO process (Identify the Decision) asks the key question that this Work Plan is attempting to address: "What monitoring, sampling and analytical activities will serve to assess the potential use of native alluvial soils as cover materials?" The results of proposed field investigations proposed in this Work Plan will be integrated with previous investigations and analytical results to answer this question in a Data Summary Report.

Step 3 of the DQO process (Identify the Inputs to the Decision) identifies the kind of information that is needed to address the question posed under Step 2. Information obtained from field and analytical activities conducted under the *Waste Rock Areas*, *Tailings and Evaporation Ponds* and the *Arimetco Heap Leach and Process Components Work Plans*, and from this Work Plan will provide inputs to the decision.

Step 4 of the DQO process (Define the Boundaries of the Study) defines the spatial and temporal aspects of the field monitoring, sampling and analytical activities proposed in this Work Plan. The field and analytical activities described in this Work Plan will be conducted for the areas with sampling locations shown on Figure 2. Proposed activities are anticipated to be conducted in 2002 and 2003, and the Data Summary Report is anticipated to be completed in 2003.

SECTION 2.0

WORK PLAN

All site investigations, and related quality assurance/quality control (QA/QC) procedures, will be consistent with the DQOs described in Section 1.3. Atlantic Richfield proposes to conduct the following activities:

- Sampling of native alluvium from off-site locations (i.e., borrow areas);
- Characterization of the alluvium to assess their potential to serve as cover materials; and
- Integration of these results with similar materials characterization activities conducted under the *Waste Rock Areas*, *Tailings and Evaporation Ponds* and the *Arimetco Heap Leach and Process Components Work Plans*.

Figure 2 shows the proposed soil sample locations within the off-site native alluvium areas. Soil sample locations were positioned to obtain representative material types within a "reasonable" transport distance to the mine site. Samples will be obtained from the upper one-foot of alluvial materials. The location and depth of proposed samples may be modified based on actual field conditions observed during sampling. Results of field investigation and laboratory analytical activities described in this Work Plan will be presented in a Data Summary Report that will include the following information:

- Volume estimates
- Geochemical characteristics
- Physical characteristics
- Comparison to human health and ecological risk criteria or guidelines

Material volume estimates of native alluvium will be based on available geologic or geophysical information for the potential borrow areas shown in Figure 2. As stated in the appropriate companion Work Plans, the quantity of potential cover materials in the WRAs, Tailings Areas and Arimetco Heaps will be calculated using a Digital Terrain Model (DTM) based on topographic information generated August 2001 aerial photogrammetric methods.

The geochemistry of the alluvial materials will be evaluated for their potential to pose a human health or ecological risk, and to support vegetation. Whole-rock analyses for the parameters listed in Table 1 and acid-base accounting (ABA) will be performed by a Nevada-certified laboratory. Agricultural analyses, performed to determine the availability of nutrients for planned or volunteer re-vegetation, will include: Nitrogen, Phosphorus and Potassium (NPK) concentrations; Boron, Chlorine, Calcium, Magnesium and Sodium concentrations; and the calculation of the Sodium Absorption Ratio (SAR).

In order to demonstrate the physical stability of mine units covered with alluvium (or combinations of alluvium and waste rock, oxide tailings and heap leach materials) geotechnical characteristics of the native alluvium will be evaluated to support slope stability and stormwater management designs. Physical parameters such as grain size (ASTM D-422), gradation and moisture storage capacity will be analyzed. Grain size analyses will also be used to assess the potential for cover materials to generate fugitive dust.

All field activities will be conducted in accordance with the Site Health and Safety Plan and the site Job Safety Analysis provided in Section 3.2.

2.1 Quality Assurance and Quality Control Procedures

Procedures for material collection and analysis will follow the specifications and standard operating procedures described in this section. In addition, the procedures will adhere to site-comprehensive Quality Assurance/Quality Control (QA/QC) methods to ensure that the quality and quantity of the analytical data obtained during the field activities are sufficient to support the DQOs. QA/QC issues include:

- Identification of appropriate sample locations and sample collection methods;
- Sample handling and transport; and
- Detection limit and laboratory analytical level requirements.

Sample Collection

Prior to sampling, field personnel will review available site geologic information to finalize sample locations. Proposed sample locations in areas of abundant and sparse native vegetation will also be evaluated in this process. Sample locations will be recorded using a hand-held global positioning system (GPS) and marked in the field with an aluminum tag enscribed with the sample number and date.

Composite sampling methods will be used to develop representative data for each area. Off-site material will be sampled by collecting the material with hand tools (e.g., disposable plastic trowels or shovels) up to one foot below the ground surface. Approximately 2.5 gallons of sample material will be excavated from a single location using a disposable plastic trowel or shovel. The collected material will then be shaken in a 5-gallon bucket to eliminate strata variation effects. The following sample splits, by weight, will be obtained:

- 2 kilograms of material for whole-rock analysis
- 1 kilograms for agricultural and ABA analyses
- 1 kilograms for grain size analysis

Each of the above samples will be placed in sealed double zip-loc© plastic bags, labeled with a permanent marker. After obtaining these splits for chemical analysis, the 5-gallon bucket will be filled with material from the same location, including surface material, for geotechnical analysis (particle size distribution). Each sample will be sealed and labeled with QA/QC procedures described below prior to shipment or transport to the analytical laboratory.

Sample Identification and Preservation

Sample labels will be completed and attached to each laboratory sample container (zip-loc© plastic bag) after each sample is collected. Strict attention will be given to ensure that each sample label corresponds to the collection sequence number marked on the container prior to sample collection. The labels will be filled out with a permanent marker and will include the following information:

- Sample identification

- Sample date
- Sample time
- Analyses to be performed
- Person who collected sample

Each sample will be tracked according to a unique sample field identification number assigned when the sample will be collected, and recorded clearly in the field notebook. A copy of the bound field notebook pages containing sample identification numbers and corresponding locations should be made after returning to the office. The first sample collected will be labeled BA-001. As described below, a duplicate sample will be collected from one of the ten proposed locations shown in Figure 2, and will be BAD-001. All final sample locations will be presented in a Data Summary Report

Sample Handling and Transport

The QA objectives for the sample-handling portion of the field activities are to verify that packaging and shipping are not introducing variables into the sampling chain that could provide any basis to question the validity of the analytical results. In order to fulfill these QA objectives, a duplicate QC sample will be used. If the analysis of the QC sample indicates that variables were introduced into the sampling chain, then the samples shipped with the questionable QC sample will be evaluated for the possibility of contamination.

A duplicate QC sample will be collected by filling the containers for each analysis at the same time and in the same manner as the original sample is collected. Each sample from a duplicate set will have a unique sample number labeled in accordance with the identification protocol, and the duplicates will be sent "blind" to the lab. For quality assurance purpose, no special labeling indication of the duplicate will be provided.

2.2 Site Job Safety Analysis

Prior to the start of work, field personnel will conduct a health and safety meeting to review the Site Health and Safety Plan (SHSP) and the site-specific Job Safety Analysis (JSA) for this Work Plan, attached as Appendix A, and to verify personal training certification. The JSA was created in accordance with Atlantic Richfield's Health and Safety protocols and the SHSP. The SHSP identifies, evaluates, and prescribes control measures for safety and health hazards, in addition to providing for emergency response at the Yerington Mine site. Copies of the SHSP will be maintained at the site, in Atlantic Richfield's Anaconda office, and in Brown and Caldwell's Carson City office.

The SHSP includes a section for site characterization and analysis that will identify specific site hazards and aid in determining appropriate control procedures. Required information for site characterization and analysis includes:

- Description of the response activity or job tasks to be performed;
- Duration of the planned employee activity;
- Site accessibility by air and roads;
- Site-specific safety and health hazards;
- Hazardous substance dispersion pathways; and
- Emergency response capabilities.

All contractors will receive applicable training, as outlined in 29CFR 1910.120(e) and as stated in the SHSP. Required training, depending on the particular activity or level or involvement, may include MSHA or OSHA 40-hour training and annual 8-hour refresher courses. Other training may include, but is not limited to, competent personnel training for excavations and confined space, first aid, and cardio-pulmonary resuscitation (CPR). Copies of the 40-hour and annual refresher certificates will be obtained prior to any work activities and will be attached to the SHSP.

The JSA describes individual tasks, the potential hazards or concerns associated with each task, and the proper clothing, equipment, and work approach for each task. Personnel will initially review the JSA forms at a pre-entry briefing. Site-specific training will be covered at the briefing, with an initial site tour and review of site conditions and hazards. The following records of pre-work safety briefings will be attached to the SHSP:

- SHSP Employee Acknowledgement Form - signed by each person working on the job, acknowledging that they have read the SHSP.
- SHSP Safety Briefing Form - signed by the Site Health and Safety Coordinator or person conducting the meeting, noting what was discussed at the meeting, and who was present.

Elements to be covered in site-specific briefing include: persons responsible for site-safety, site-specific safety and health hazards, use of PPE, work practices, engineering controls, major tasks, decontamination procedures and emergency response. The JSA for this Work Plan incorporates individual tasks, the potential hazards or concerns associated with each task, and the proper clothing, equipment, and work approach for each task. The following table outlines the tasks and associated potential hazards that are included in the JSA provided in Appendix A:

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS
1. Safety Meeting.	
2. Sample location identification	1. Inhalation of fugitive dust
3. Collection of soil sample by hand and decontamination of equipment.	1. Skin irritation from dermal or eye contact. 2. Slipping or falling on sharp rocks or other protruding objects. 3. Encounter with dangerous wildlife (e.g., rattlesnakes)
4. All Activities	1. Back, hand, or foot injuries during manual handling of materials.
5. All Activities	1. Heat exhaustion or stroke.
6. All Activities	1. Hypothermia or frostbite.
7. Unsafe conditions.	1. All potential hazards.

SECTION 3.0

REFERENCES CITED

Applied Hydrology Associates (AHA), May 1983, *Evaluation of Water Quality and Solids Leaching Data*, prepared for Ananconda Minerals Company.

Brown and Caldwell, 2002a, *Yerington Mine Site Closure Scope of Work*, prepared for Atlantic Richfield Company.

Brown and Caldwell, 2002b, *Draft Waste Rock Areas Work Plan*, prepared for Atlantic Richfield Company.

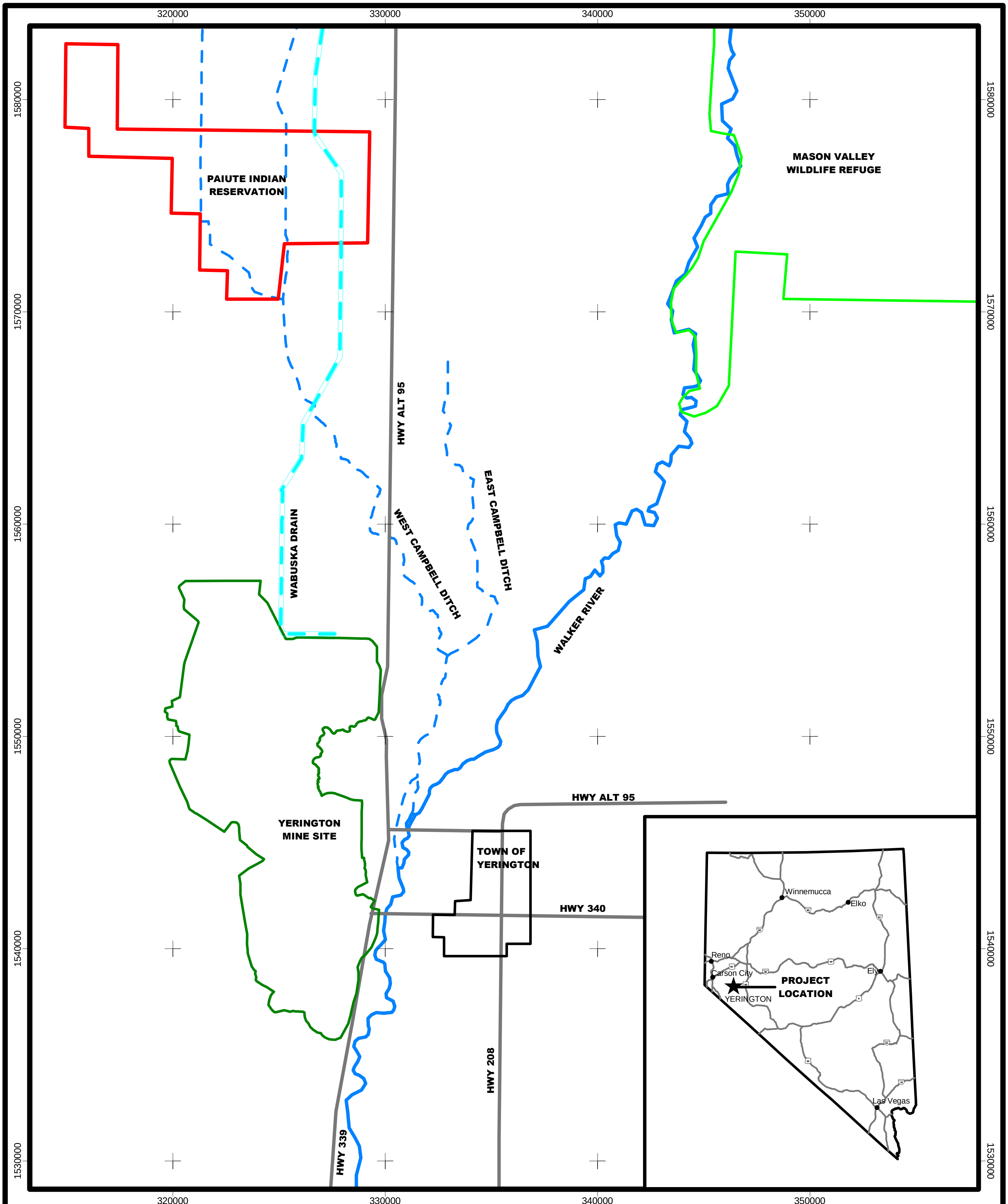
Brown and Caldwell, 2002c, *Draft Tailings Areas and Evaporation Ponds Work Plan*, prepared for Atlantic Richfield Company.

Brown and Caldwell, 2002d, *Draft Arimetco Heap Leach and Process Components Work Plan*, prepared for Atlantic Richfield Company.

Nevada Division of Environmental Protection – Bureau of Corrective Actions (NDEP), November 1999a, *Field Sample Plan*, prepared in for the U.S. Environmental protection Agency, Region IX, Superfund Division.

Shacklette, H.T. and Boerngen, J.G., 1984, *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United* States, U.S. Geological Survey Professional Paper 1270.

United States Environmental Protection Agency (USEPA), October 2000 Expanded Site Inspection.



NOTES:
1.) PROJECTION: NEVADA STATE PLANE, WEST ZONE
1927 NORTH AMERICAN DATUM (FEET)

BROWN AND CALDWELL
Carson City, Nevada

DATE: SEPTEMBER 2002

Atlantic Richfield Company

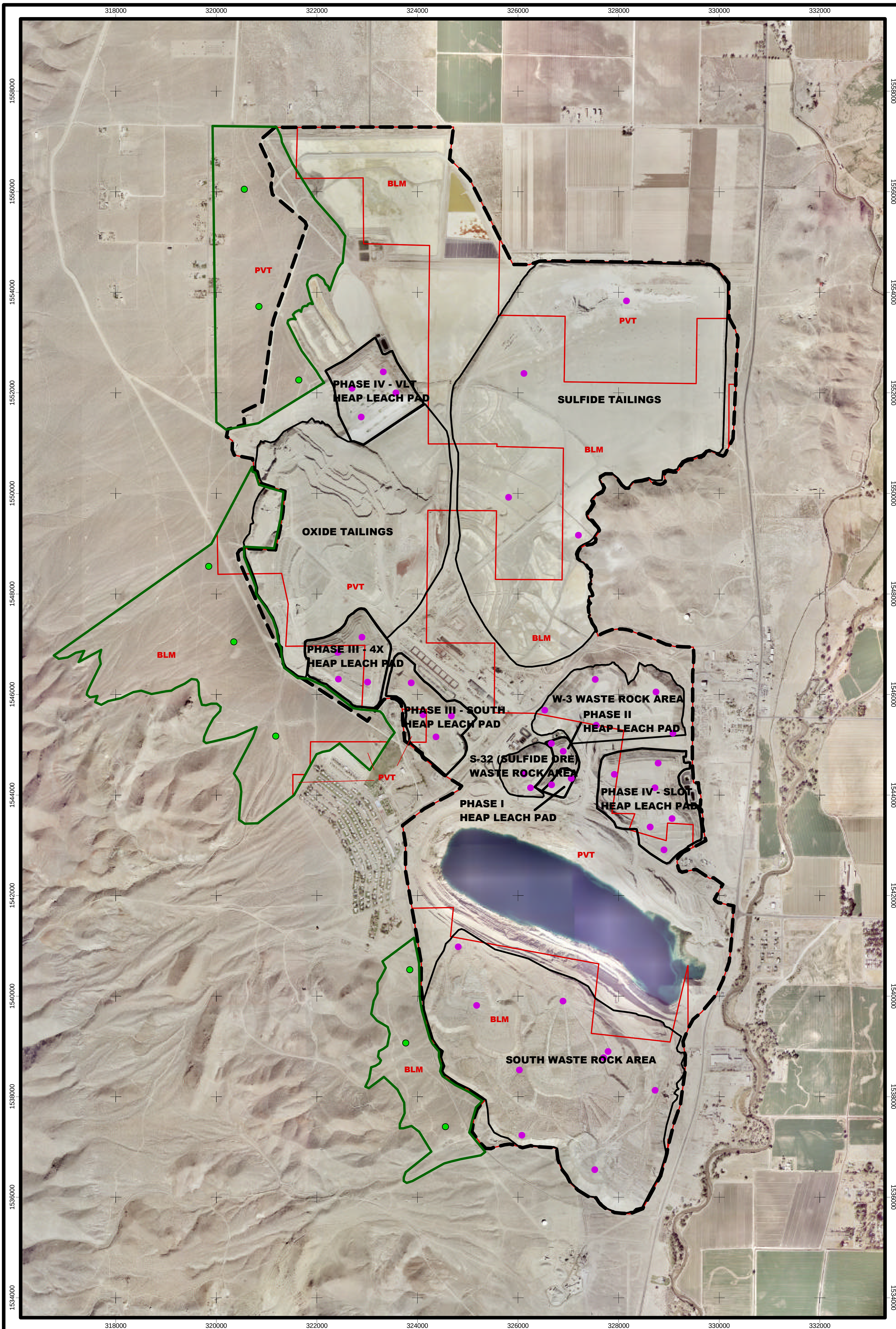
PROJECT NUMBER: 21243

SCALE:
2000 0 2000 4000 Feet
1:72000

N

FIGURE 1
SITE LOCATION

P:\ARCO\21243\(TASK)\FIGURE_1



NOTES:
1.) PROJECTION: NEVADA STATE PLANE, WEST ZONE
1927 NORTH AMERICAN DATUM (FEET)
2.) LAND STATUS OBTAINED FROM BLM 2002

EXPLANATION

MINE BOUNDARY
MINE UNIT
POTENTIAL COVER BORROW MATERIALS AREA
PROPOSED SAMPLE LOCATION (BORROW AREA)
PROPOSED SAMPLE LOCATION (SEE COMPANION WORK PLANS)
LAND STATUS BOUNDARY

BROWN AND CALDWELL
Carson City, Nevada

DATE: SEPTEMBER 2002

Atlantic Richfield Company

PROJECT NUMBER: 21243

SCALE:
600 0 600 1200 Feet
1:24000

N

FIGURE 2
PROPOSED SAMPLE LOCATIONS

P:\ARCO\21243\Cover Materials\General\FIGURE_2

Table 1. Whole-Rock Analytical Parameters

Parameter	Phase	Method	Detection Limit	Units
Cations - Anions and General Parameters				
Aluminum – ICP-OES	Soil/Whole Rock	SW – 846 6010A	0.05	mg/Kg
Arsenic – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Barium – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Boron – ICP-OES	Soil/Whole Rock	SW – 846 6010A	0.05	mg/Kg
Cadmium – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Calcium – ICP-OES	Soil/Whole Rock	SW – 846 6010A	0.1	mg/Kg
Chromium – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Cobalt – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Copper – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Iron – ICP-OES	Soil/Whole Rock	SW – 846 6010A	0.05	mg/Kg
Lead – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Magnesium – ICP-OES	Soil/Whole Rock	SW – 846 6010A	0.1	mg/Kg
Manganese – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Mercury – AA CV	Soil/Whole Rock	SW - 846 7471	0.05	mg/Kg
Molybdenum ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Nickel – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Potassium – ICP-OES	Soil/Whole Rock	SW – 846 6010A	0.5	mg/Kg
Selenium – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Sodium – ICP-OES	Soil/Whole Rock	SW – 846 6010A	0.1	mg/Kg
Vanadium – ICP-MS	Soil/Whole Rock	SW – 846 6020	1	mg/Kg
Zinc – ICP-MS	Soil/Whole Rock	SW – 846 6020	10	mg/Kg

AA CV=Atomic Absorption Cold Vapor
ICP-MS=Induced Coupled Plasma-Mass Spectrometry
ICP-OES=Induced Coupled Plasma-Optical Emission Spectroscopy

JSA NUMBER: Yerington – 009 **DATE:** 09/09/02 **NEW** X **REVISION**	**Company Performing the Job:** Brown and Caldwell	**SUPERVISOR:** Charles Zimmerman **SAFETY OFFICER:** Brian Bass
JOB TITLE OR TASK: Cover Materials: Subsurface soil sampling of off-site areas.	**TITLE OF PERSON(S) WHO PERFORMS JOB:** Site Managers: Brian Bass, Nathan Robison, Chad Leonard Operations Technician:	**ANALYSIS BY:** Brian Bass **REVIEWED BY:** **APPROVED BY:**

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE) AND/OR PERTINENT JOB SAFETY FORMS: Hard hat, safety goggles or glasses, steel-toed boots. As appropriate: rubber gloves, face shield, rubber boots or hip waders, half-mask respirator.

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	PREVENTIVE OR CORRECTIVE ACTION
1. Pre-Construction Safety Meeting.		1. All employees assigned to this task will attend a pre-construction safety meeting, which will include the pertinent JSAs, Standard Operating Procedures, types of potential hazards, and actual hazards present and controls for those hazards.
2. Sample location identification	1. Inhalation of fugitive dust	1. Avoid working in the area when excessive airborne dust is present. Find shelter if nearby (e.g., automobile). 2. Wear a respirator with appropriate cartridge when dust is present, until you can get shelter from the wind.
3. Collection of soil sample by hand and decontamination of equipment.	1. Skin irritation from dermal or eye contact. 2. Slipping or falling on concrete structures- sharp rock and protruding objects. 3. ENCOUNTERING CONTAINERS WITH SEALED AND UNLABELED CONTENTS ---UNKNOWN !!!! POTENTIAL FOR EXPLOSION OR INHALATION OF POISONOUS VAPOR OR DUST.	1. Wear rubber or latex gloves to prevent contact with hands and arms. 2. Wear safety glasses or goggles to prevent eye contact from dust. 3. Wear boots with treaded soles to reduce potential for slipping. 4. Never open containers of unknown contents. Notify Atlantic Richfield and B&C H&S Coordinator.
4. All Activities	1. Back, hand, or foot injuries during manual handling of materials.	1. Workers should inspect materials for slivers, jagged or sharp edges, and rough or slippery surfaces. 2. Workers should wipe off greasy, wet, slippery, or dirty objects before attempting to handle them. 2. In most cases, gloves or other protection should be used to prevent hand injuries. 3. Steel-toed boots should be used for protection of the feet when not in the water. 4. Routes should be surveyed for obstacles prior to moving materials from one location to another. 5. All three main factors in manual lifting (load location, task repetition, and load weight) must be considered when evaluating what is safe or unsafe to lift.

		7. All manual handling of heavy or bulky objects should be carefully planned to avoid injuries and damage to equipment.

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	PREVENTIVE OR CORRECTIVE ACTION
5. All Activities	1. Heat exhaustion or stroke.	1. Avoid strenuous work in ambient temperatures over 80 degrees F. 2. Wear light-colored clothing, shaded sunglasses, and hat that provides shade and adequate air movement. 3. Find cool, shady area for breaks or respite from heat. 4. If worker feels dizzy, has a headache, has cool, moist, or pale skin or is weak, immediately move to a cooler environment, loosen tight clothing, provide air circulation to area, and provide small amounts of cool water to drink. 5. If worker has a change in level of consciousness, high body temperature, red, hot skin, rapid or weak pulse, or rapid or shallow breathing, call the emergency phone number and give care in accordance with #4 above.
6. All Activities	1. Hypothermia or frostbite.	1. Avoid working in extreme cold. 2. Wear warm, layered clothing with adequate protection for hands and feet. 3. Find warm area out of the wind for breaks or respite from cold. 4. If worker experiences shivering, irregular pulse, numbness, glassy stare, impaired judgement, loss of muscle control with no shivering, or loss of consciousness, gently move worker to warm place, check vital signs, remove any wet clothing, cover with blankets and warm slowly. 5. If worker experiences loss of feeling or sensation in extremities, discolored or waxy skin, blisters or blue skin, remove wet clothing and jewelry, soak frostbitten area in warm water, cover with dry, sterile dressing (do not rub anything on the area), check vital signs.
7. Unsafe conditions.	1. All potential hazards.	1. Where a situation presents a hazardous condition, the exposed employee will be removed from the hazardous area until all necessary precautions have been taken to eliminate the hazard and ensure their safety.

Personnel Signatures		
JSA NUMBER: Yerington-009 **DATE:** 09/09/02 **NEW** X **REVISION**	**Company Performing the Job:** Brown and Caldwell	**SUPERVISOR:** Charles Zimmerman **SAFETY OFFICER:** Brian Bass
JOB TITLE OR TASK: Cover Materials: Subsurface soil sampling of off-site areas.	**TITLE OF PERSON(S) WHO PERFORMS JOB:** Site Managers: Brian Bass, Nathan Robison, Chad Leonard Operations Technician:	**ANALYSIS BY:** Brian Bass **REVIEWED BY:** **APPROVED BY:**